



Procuring Renewable Energy Resources

"Green Power and Green Tags - What Is It and How Do I Get It ?"

Joe Bourg
Millennium Energy LLC
May 2, 2001

“Minimizing electrical load requirements,
and then meeting those requirements
with clean electricity resources is at the
core of a whole building sustainable
design strategy”

What is "Green" Power ?

- Policy Definition(s) - the main themes are rapid natural replenishment and environmentally preferable
 - Wind
 - Solar
 - Geothermal
 - Biomass
 - Small hydroelectric







Green Power Benefits

- To avoid purchases of conventional "system" power

"System" Power

National Mix of Utility Generation by Energy Source 1997

<u>Resource</u>	<u>Percentage</u>
Coal	57.3%
Nuclear	20.1%
Hydro	10.8%
Gas	9.1%
Oil	2.5%
Non-hydro Renewables	0.2%

Green Power Benefits

- Electric power plants are the single largest source of air pollution in the nation

Air Emissions from U.S. Electricity Generation

<u>Air Pollutant</u>	<u>Percentage of Total</u>
Sulfur Dioxide	66%
Nitrogen Oxide	29%
Carbon Dioxide	36%
Mercury	21%

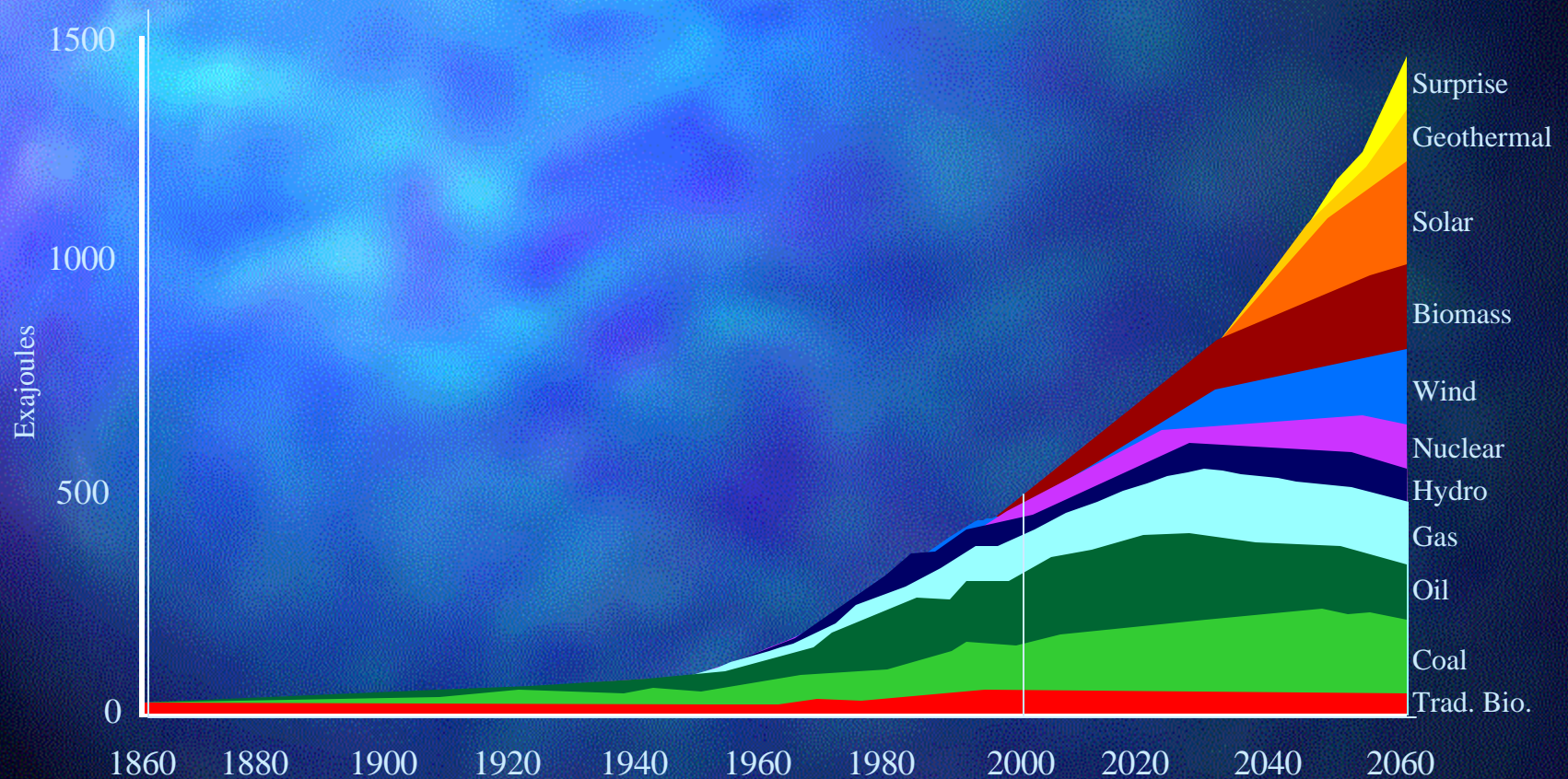
Green Power Benefits

- For Federal facilities, green power purchases are now strongly encouraged by Executive Order 13123
- Accomplishment of agency's mission
- Can assist facilities in locking in a "hedge" against future price volatility

New vs. Existing "Green" Power Resources and Market Transformation

- Purchasing green power sends price signal to supplier that they need to build more renewable resources
- Buying green power from new renewable resources makes the biggest difference for the environment
- Many programs are designed to fund bringing new renewable resources on line

Shell Sustained Growth Scenario



Source: Shell, *The Evolution of the World's Energy Systems*, 1995

Green Power Costs

- Incremental cost may be at a 1-2 cent/ kWh premium - but is changing rapidly
 - Often times this premium can be offset by cost savings from efficiency measures and anticipated cost increases in electricity rates
- Procurement Challenges

Sources of and Limits to Agency Authority to Purchase Green Power

- Federal Acquisition Regulations (FAR)
 - Part 12 - Commercial Items
- Executive Order 13123
- Precedent
 - EPA Richmond
 - Multi-Agency, Colorado and New England
 - USPS

Key Elements of a Successful Procurement Strategy

- Assemble multi-function energy team
- Determine agency objectives
- Select verification approach
- Evaluate cost and quantity considerations
- Obtain electricity consumption data
- Determine renewable energy requirements
- Establish contract length
- Negotiate and arrange purchase from utility

Purchasing Renewable Energy: A Guidebook for Federal Agencies

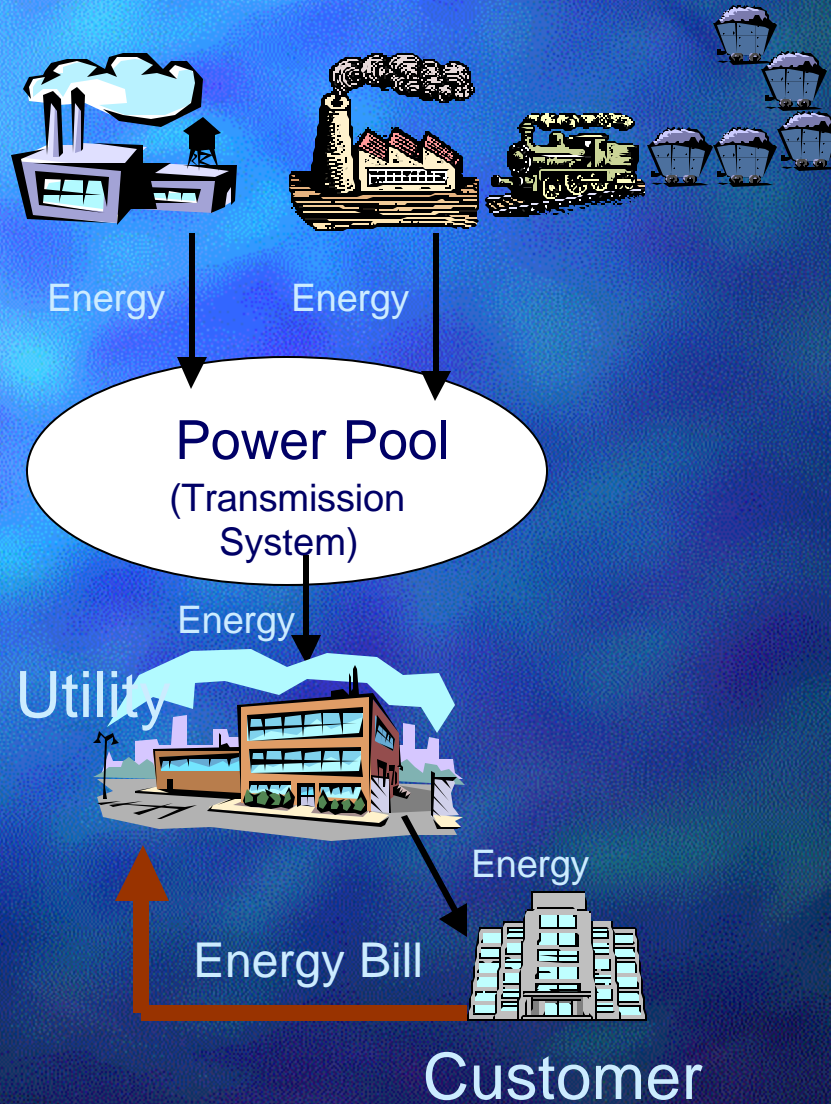
- Intended for federal energy managers, procurement officers, other agency reps with interest in green power
- Outlines key issues, strategies, procurement approaches, benefits and costs, etc.
- Available on the Federal Energy Management Program website (<http://www.eren.doe.gov/femp/>)

Green "Tags"*

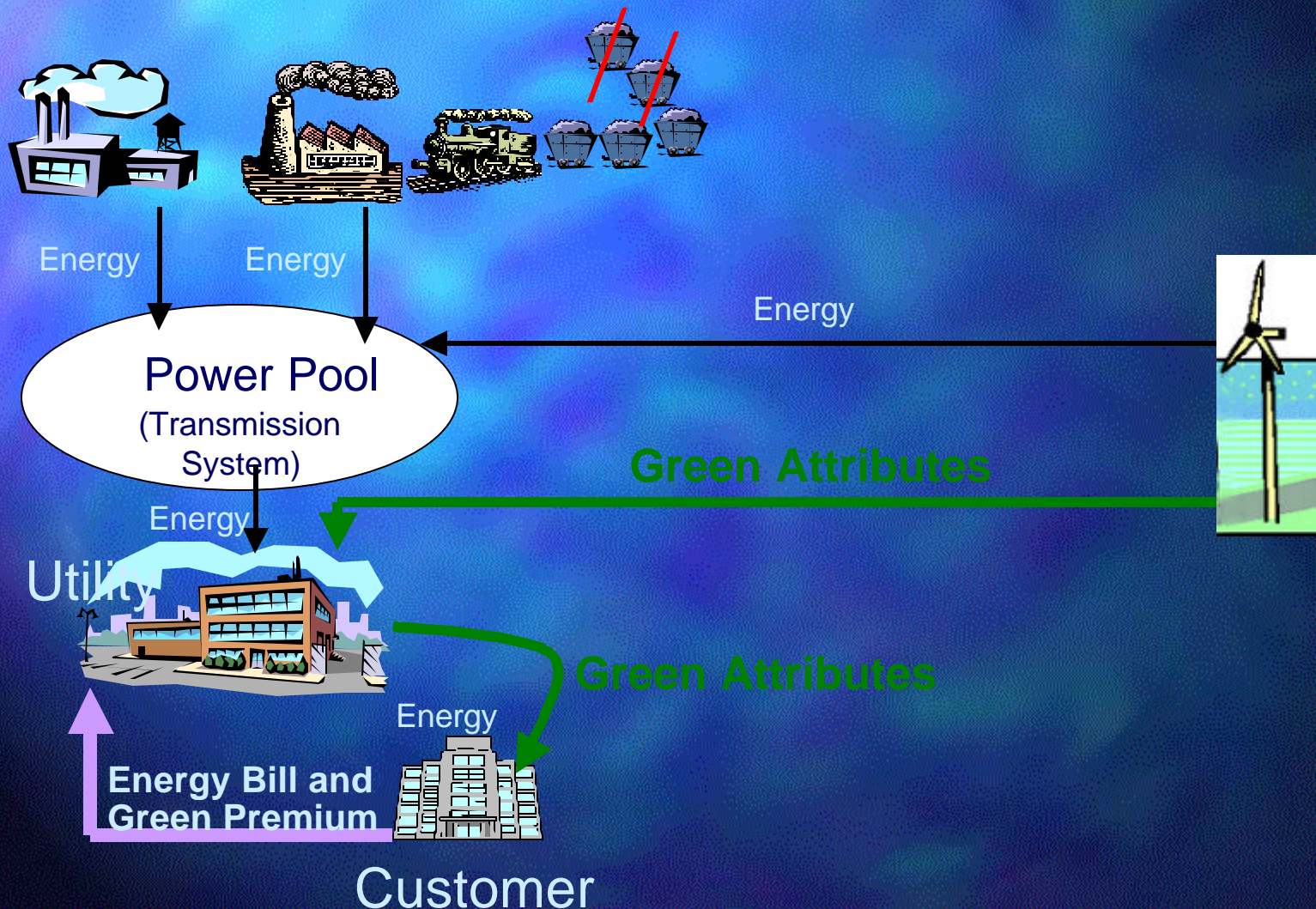
**also known as Renewable Energy Credits (REC),*

- Indirect method to purchase green power
- A renewable energy facility produces 2 distinct products, sold separately:
 - Generic electricity (sold into the local grid/power pool)
 - Environmental attributes (sold to green power buyer)
- Electricity continues to be delivered by utility.
Environmental attributes come from Green Tag supplier
- Utility provider and bill does not change
- Above market premium paid to supplier

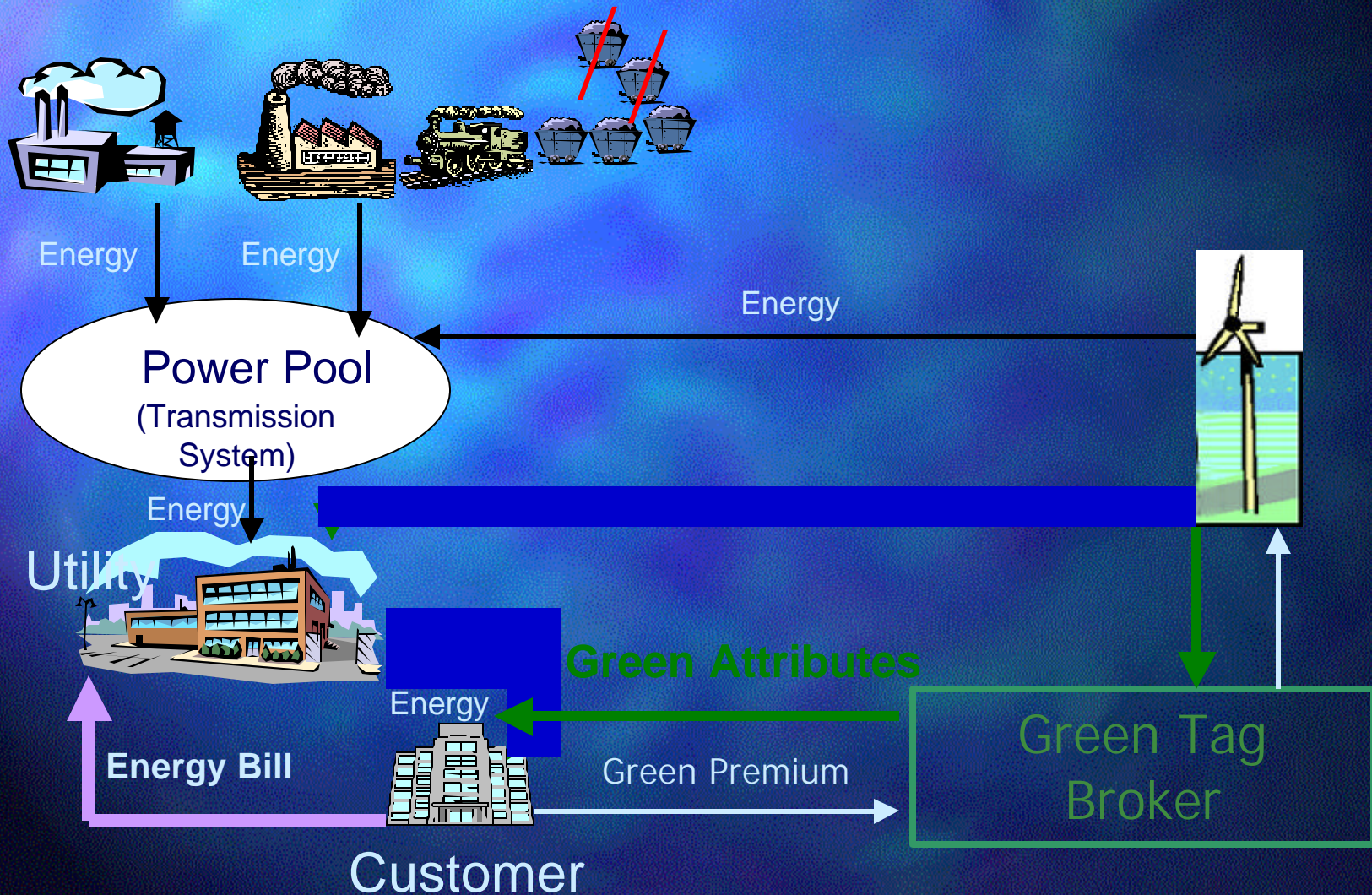
Traditional Power Transaction



Green Pricing Transaction



Green Tag Transaction



Green Tags - Benefits to Customer

- Often the lower cost option
- Can buy them anywhere - even if no competitive green power products available or a regulated utility green pricing program
- Option for leased facilities that don't pay utility bill
- Able to aggregate facilities across utility service territories/states/country

Green Tags - Benefits to Supplier

- Contract with green power retail energy supplier not required for renewable developer
 - Simply sell electrons into grid as generic electricity
 - Transmission contract from renewable site to end-use customer not required
- Increased siting flexibility

Green Power vs. Green Tag

Green Power	Green Tag
Purchase from utility or power marketer	Purchase from green tag selling entity
Only available some areas	Available anywhere
Energy and green attributes on same bill	Energy bill unchanged. Green premium paid to selling entity

Who is Currently Selling Green Tags?

- Bonneville Environmental Foundation
 - 2.2 ¢/kwh (hopes to reduce price to 1¢/kwh, and is considering “indexing” product)
- PG&E National Energy Group (Madison, NY)
- Atlantic Renewable Energy Corp. (Fenner, NY and future project in Mill Run, PA)
- Green Mountain Power in Vermont

Conclusions

- The potential economic, social and environmental benefits of green power are enormous
- The option to purchase green power products is widely available to federal agencies
- Federal agencies are large energy users and have the authority to purchase green power
- Economic, environmental and technological developments all point towards an increasing role for green power purchases by Federal agencies

"By selecting cleaner power from 'green' resources for buildings, the building becomes part of the solution instead of contributing to the pollution problem resulting from conventional generating sources"

